Part 15 Coalition Members

Alarm Industry Communications Committee

American Petroleum Institute

Association of American Railroads

Elster Solutions

FreeWave Technologies, Inc.

GE Digital Energy

Inovonics Wireless Corporation

Intelleflex Corporation

Itron, Inc.

Landi+Gyr Company

MJ Lynch & Associates LLC

Notor Research

Plantronics

Qualcomm Incorporated

Silver Spring Networks

Starkey Laboratories, Inc.

Utilities Telecom Council

Wireless Internet Service Providers Association

Part 15 Coalition Supporters

Cisco

E-Z Pass Group

Google Inc.

IEEE 802.11

Kapsch TrafficCom IVHS, Inc.

Microsoft Corporation

New America Foundation

Public Knowledge

January 11, 2013

The Honorable Julius Genachowski
Chairman
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Opposition to Progeny Waiver Request
FCC WT Docket No. 11-49

Dear Chairman Genachowski:

The undersigned urge you to reject the proposal of Progeny LMS, LLC ("Progeny") to use the 902-928 MHz band (the "Unlicensed Band") for licensed high-power transmitters, which will interfere with millions of lower-powered unlicensed industrial and consumer devices already operating in that band. Field testing has proved conclusively that Progeny will disrupt a substantial number of unlicensed devices that consumers and businesses use every day.

In December 2011, the FCC granted Progeny waivers of two Part 90 rules. As required by the rules, the FCC directed Progeny to test its higher-powered equipment and to ensure that its operations did not cause "unacceptable levels of interference" to unlicensed devices. The test reports filed with the FCC show that Progeny has not met this condition of its waiver.

Much is at stake. The operations of millions of unlicensed devices – all manufactured, purchased, installed, and used in reliance on the FCC's existing rules before Progeny received the waiver – will be placed at risk.

Allowing Progeny to operate as proposed would adversely impact preexisting uses essential to public safety and critical infrastructure, and undermine important public policy initiatives – including rural broadband connectivity and the President's Plan for a 21st Century Electric Grid. For instance, low-powered devices currently operating in the Unlicensed Band include:

- Medical devices such as wireless glucose meters and insulin pumps;
- Important freight railroad applications, including wireless links for signaling systems, wireless download of train event recorders, and Automatic Equipment Identification (AEI), which tracks equipment and cargo;
- Smart meters and appliances;
- Supervisory Control and Data Acquisition ("SCADA") systems that monitor and control the safety and integrity of oil and natural gas pipelines and production fields;
- Water and gas utility measurement devices;
- Radio Frequency Identification Devices ("RFIDs") that automatically track assets and supply chains;

- Fixed broadband service in rural areas that is available to thousands of consumers only through the use of the 902-928 MHz unlicensed band due to the superior propagation characteristics in this band that enable signals to penetrate trees and terrain obstructions; and
- Countless other important applications for utilities, oil and natural gas companies, railroads, and other critical infrastructure companies as well as public safety and health services.

Moreover, millions of American consumers rely on unlicensed devices in this band for everyday uses, including wireless hearing aid products, emergency call pendants, home alarm systems, cordless phones and wireless headsets, and a host of other popular consumer items. The impact on the U.S. economy of unacceptable interference to these ubiquitous and important devices is immeasurable.

Reducing the amount of usable unlicensed spectrum would contravene public policy at a time when consumers and businesses require more and more unlicensed bandwidth for education, public safety, teleworking and other important applications. As you know, the FCC's National Broadband Plan found that technologically flexible access to unlicensed frequencies is an essential innovation policy that the FCC should foster. You recently testified before the House Committee on Energy and Commerce Subcommittee on Communications and Technology that unlicensed spectrum has an established record of creating hundreds of billions of dollars of value for our economy and consumers. And, FCC Commissioner Mignon Clyburn testified at the same hearing that unlicensed spectrum generates up to an estimated 37 billion dollars each year for the U.S. economy.

The record is clear. Progeny has done nothing to protect users of unlicensed devices, and repeatedly has requested rule concessions that threaten the established and growing Unlicensed Band, a national resource that quite simply cannot be placed at risk. We urge you to withhold permission for Progeny to commence commercial operations until the potential for unacceptable interference to the users of the Unlicensed Band is eliminated.

Sincerely,

[Signatories On Following Pages]

cc: The Honorable Robert M. McDowell, Commissioner
The Honorable Mignon L. Clyburn, Commissioner
The Honorable Jessica Rosenworcel, Commissioner
The Honorable Ajit Pai, Commissioner

SIGNATORIES

American Gas Association

American Petroleum Institute

American Public Power Association

American Water Works Association

Association of American Railroads

Demand Response and Smart Grid Coalition

Edison Electric Institute

Energy Telecommunications and Electrical Association

GridWise Alliance

Large Public Power Council

National Association of Manufacturers

National Electrical Manufacturers Association

National Rural Electric Cooperative Association

New America Foundation

Public Knowledge

Utilities Telecom Council

Wireless Internet Service Providers Association

Alloynet Wireless Technologies, Inc.

Airspan Networks, Inc.

ARC Wireless LLC

Anadarko Petroleum Corporation

Cambium Networks Ltd.

Black Hills Energy

Colquitt Electric Membership Corporation

Cielo Systems International

Dairyland Power Cooperative

Convergence Technologies, Inc.

Exelon Corp.

Elster Solutions

FreeWave Technologies, Inc.

FirstEnergy Corp.

Great River Energy

The General Electric Company

Holy Cross Energy

Green Mountain Power Corporation

Intelleflex Corporation

Inovonics Wireless Corporation

Itron, Inc.

Invictus Networks, LLC

Link Technologies, Inc.

Kinder Morgan, Inc.

MJ Lynch & Associates LLC

Mid-Kansas Electric Company, LLC

New America Foundation

Motorola Solutions, Inc.

Notor Research

Northeast Utilities

Pepco Holdings, Inc.

PDMNet, Inc.

Plantronics, Inc.

Schneider Electric SA

Siemens Corporation

Southern Star Central Gas Pipeline, Inc.

Starkey Laboratories, Inc.

Streakwave Wireless, Inc.

Sunflower Electric Power Corporation

Trango Systems, Inc.

Tyco

Ubiquiti Networks, Inc.

Village of Mt. Prospect, IL

Williams Northwest Pipeline, GP

WISP-Router, Inc.

WLAN Mall

GE
Digital Energy

March 13, 2013

BY ELECTRONIC DELIVERY

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street SW
Washington DC 20554

Re: Ex Parte Presentation
Request by Progeny LMS, LLC for Waiver of Certain Multilateration Location and Monitoring Service Rules
WT Docket No. 11-49

Dear Ms. Dortch:

On March 12, 2013, the following representatives from the General Electric Corporation ("GE") met with Julius Knapp, Chief of the Office of Engineering and Technology ("OET"), as well as Geraldine Matise, Hugh Van Tuyl and Karen Ansari from the OET and Paul Murray from the Wireless Telecommunications Bureau: Michael Fitzpatrick, John Geiger, David Malkin and Richard Place. The purpose of the meeting was to discuss GE's concerns regarding the likelihood of interference with industrial supervisory control and data acquisition networks from Progeny's proposed system. GE reviewed the attached slides with FCC staff.

GE representatives recommended that the FCC consider several options to resolve the concerns of Part 15 device manufacturers, including the initiation of a notice-and-comment rulemaking to define "unacceptable interference" to Part 15 devices. GE noted that the FCC has previously defined this term for certain services in the 800 MHz and 900 MHz Business/ Industrial Land Transportation Pool[1]. Therefore, one could reasonably expect the FCC to be able to reach a similarly quantifiable and objective definition for unlicensed devices in the 902-928 MHz band. Such a definition would allow the FCC, Progeny and other interested parties to design and conduct tests that conclusively determine whether Progeny's system satisfies the requirements established in Part 90 rules and the Progeny Waiver.[2]

Please direct any questions to the undersigned.

[1] 47 C.F.R. § 90.672(a).

[2] Progeny Waiver at ¶ 35; see also 47 C.F.R. § 90.353(d).

Respectfully submitted,

/s/
David Malkin
Director, Government Affairs and Policy
GE Digital Energy
4200 Wildwood Parkway
Atlanta, GA 30339
678-742-1426

GE Digital Energy

Progeny and the 902-928 MHz Band

Technical Briefing to FCC Staff

March 12, 2013

imagination at work

Agenda

1. Business overview
2. Industrial applications
3. Technical concerns
4. Case study… utility SCADA system
5. Recommendations

GE Digital Energy

Industrial Communications

- Industry leader in mission critical communications
  - ✓ Industrial strength wireless (MDS)
  - ✓ Fiber optic multiplexers (Lentronics)
  - ✓ Ethernet switches and converters

- 20+ years of experience with hundreds of customers worldwide

- Global installed base of over 2 MM devices
  - ✓ 1 MM+ devices in unlicensed band

- Service portfolio includes:
  - ✓ Data acquisition
  - ✓ Wireless wide area networks
  - ✓ Backhaul networks
  - ✓ Consulting & engineering services
  - ✓ Accessories

imagination at work

Mission critical unlicensed applications

902-928 MHz band

Utilities

Secure, private networks for SCADA[1] systems, distribution automation, and advanced metering infrastructure

Oil & Gas

Wireless communications to automate wellhead monitoring, protection and control; remote status monitoring and control of pipeline field instruments

Water

Communications solutions to secure reservoirs and pumping stations, monitor vital water flows, and send control signals to pipes, valves & pumps

Transportation

Networking solutions for security & video systems, remote locomotive control, condition monitoring, dispatch systems and SCADA applications

[1]Supervisory Control and Data Acquisition

Progeny operations in 902-928 MHz

Top technical concerns

- Transmitter beacon height
  - ✓ Placed "at the highest available points in and around the communities where location services will be provided"[1]
  - ✓ Beacons will likely be line-of-sight to outdoor SCADA systems

- Transmitter beacon density
  - ✓ Multiple opportunities for interference with industrial SCADA systems in portion of spectrum occupied by Progeny
  - ✓ Interference could render 4 MHz unusable for Part 15 SCADA systems within 10+ miles of Progeny's system

- Available licensed spectrum
  - ✓ Progeny would operate in only 4 MHz of 902-928 MHz band
  - ✓ But the precedent would be set – under Part 90 rules, licensed LMS operations could consume over half of the band

[1]Progeny LMS, LLC, *Permitted Written Ex Parte Presentation*, WT Docket No. 11-49, filed February 19, 2013

Interference case study

Utility SCADA system using GE iNET radio

SCADA system design considerations

- Target received signal strength of -85 dBm
- Carrier-to-Interference ratio of 10 dB needed to avoid co-channel signal interference
  - ✓ Interference-free operations require other on-channel signals to be -95dBm or weaker

Expected performance near Progeny system

- Free-space path loss versus distance (Friis Equation)
  - ✓ Radio must be 316 miles from 30W beacon to receive -95 dBm
  - ✓ Assumes 6 dBi antenna gain
- Earth's curvature reduces impact distance… but not enough to mitigate potential impact to utility long-range (10-20 mile) SCADA systems
- 10-20% Progeny duty cycle not a solution, as multiple LoS beacons will be heard on same frequency
- Only strongest remote signals would be received by base station
  - Signal strength would be -45 dBm one mile from Progeny beacon (Friis)
  - Remote signals must be -35 dBm
  - SCADA range effectively reduced to 0.11 miles if using same channel as Progeny compared to a typical 10 mile range.

imagination at work

Recommendations to FCC

Procedural pathways

- Develop criteria to define "unacceptable interference" in 4 MHz band occupied by Progeny
- Design and order field testing with utility long-range SCADA systems to test in 4MHz band for "unacceptable interference" under two scenarios:
  - ✓ Digital Transmission System (DTS) -- CFR47 part 15.247 (a)(2)
  - ✓ Frequency hopping -- CFR47 part 15.247 (a)(1)
- Delay Progeny decision until additional field tests are concluded to ensure spectrum is not effectively repurposed for only M-LMS use

Operational pathways

- Direct Progeny to reduce transmit power to 4W EIRP – compensate with additional towers as need
- Grant TV channel 37, 608-614 MHz, for M-LMS operations – consistent with current plans to repurpose this spectrum
- Relocate Progeny to upper 700 MHz D-Block – consistent with public safety applications

End

E-ZPASS BRIEFING FOR THE FCC IN THE PROGENY MATTER

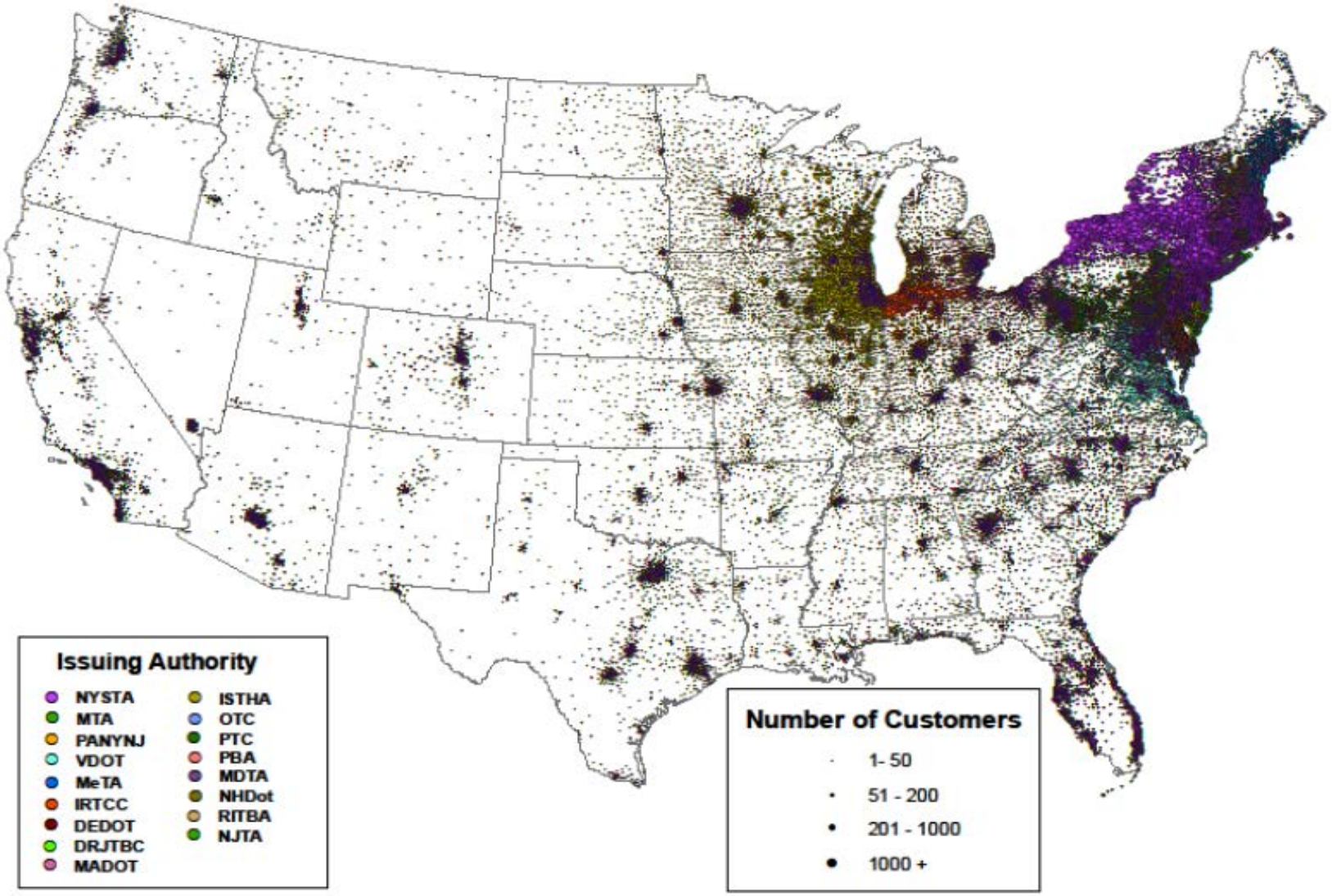
April 11, 2013

PJ Wilkins
Executive Director
302-577-1333

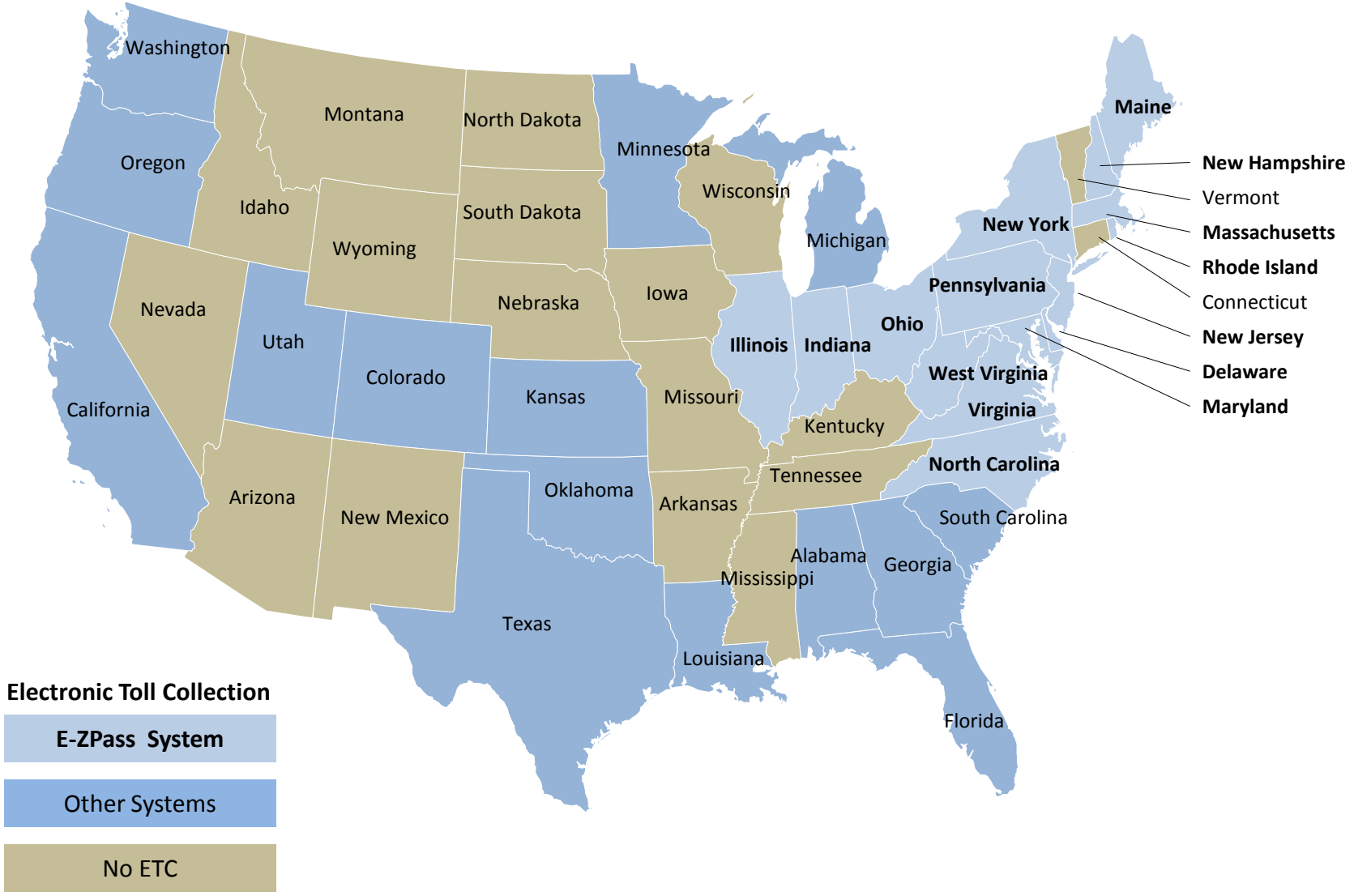
E-ZPASS GROUP

- World's largest interoperable toll collection system, operating in 15 states
- 25 million Part 15 devices deployed to customers in all 50 states and beyond
- Collects almost $7 billion in annual revenue from 2.5 billion transactions – larger impact nationally – 75% of all tolls are electronic
- Operates with very high levels of accuracy and proven customer satisfaction

E-ZPass Customer Distribution by Issuing Authority



Electronic Toll Collection in the United States



E-ZPASS

- More than a billion dollars of infrastructure in place, consisting of roadside units and 25 million in-vehicle devices
- System transactions occur in milliseconds at highway speeds, at over 99.9% accuracy
- Extensive effort underway to comply with MAP21 legislation for nationwide interoperability. The 915 band is the only technology available to meet the requirements.

CONCERNS ABOUT INTERFERENCE

- Safety will be impacted by interference with our equipment; erroneous feedback
- Will be a substantial risk to our operations
- Will hamper the free flow of traffic through our facilities
- Functionality may be lost – gates inoperative, causing massive delay and congestion
- TRANSMIT Traffic Management system may be negatively impacted
- Insufficient data presented to assure compatibility with our deployed system

WHAT ARE WE ASKING FOR?

- Progeny to conduct additional testing to ensure the E-ZPass system is not negatively impacted
  - No safety concerns with the traveling public
  - No degradation of our equipment
  - No reduction in system performance